

## CLAIMS

### WHAT IS CLAIMED IS:

1. A stator for an alternator comprising:

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a stator core fixed to a case and facing a rotor, and formed in a circumferential direction with a number of radially extending slots of a rectangular cross section; and a stator coil installed in said slots of said stator core; and

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said stator coil comprising wire-shaped conductors wound so as to alternately occupy an inner layer and an outer layer in a slot depth direction within said slots at intervals of a predetermined number of slots, said conductors being bent back outside said slots at axial end surfaces of said stator core to form a plurality of turn portions, said plurality of turn portions being bent back in a similar shape inclined with respect to an outer circumferential surface of the stator core and so as to align in rows in a circumferential direction and form coil end groups, and, a cross-section of at least a principal portion of said stator coil inside said slots is approximately rectangular, a cross-section of at least a portion including end portions of said coil end is approximately circular or approximately elliptic, and a cross-sectional area of said approximately rectangular cross-sectional portion differs from that of said approximately circular cross-sectional portion or said approximately elliptic cross-sectional portion.

2. A stator for an alternator according to Claim 1 wherein:

a cross section said conductors comprising said coil ends is approximately circular or approximately elliptic throughout a substantial entirety of said conductors.

3. A stator for an alternator according to Claim 1 wherein:

a cross-sectional area of said conductors inside said slots is larger

than a cross-sectional area of said conductors comprising said coil ends.

4. A stator for an alternator according to Claim 1 wherein:  
said stator coil comprises a plurality of U-shaped conductor segments, end portions thereof being joined to each other, and a cross section of at least a portion including ends of turn portions of said U-shaped conductor segments is approximately circular or approximately elliptic.
5. A stator for an alternator according to Claim 1 wherein:  
a cross section of end portions of said U-shaped conductor segments is approximately circular or approximately elliptic.
6. A stator for an alternator according to Claim 1 wherein:  
said stator coil comprises a continuous conductor wound so as to alternately occupy an inner layer and an outer layer in a slot depth direction within said slots at intervals of a predetermined number of slots, said conductor being bent back outside said slots at both sides of said stator core.
7. A stator for an alternator according to Claim 1 wherein:  
a plurality of said conductors are disposed in a radial direction of said slots, and a cross section of said conductors in said slots is an approximately rectangular shape having long sides in a radial direction.
8. A stator for an alternator according to Claim 1 wherein:  
said conductors comprise four (4) or more layers in said slots, and said stator coil comprises two (2) or more rows of coil end groups.
9. A stator for an alternator according to Claim 1 wherein:  
a hardness of said conductors of said coil ends is less than that of said conductors in said slots.

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10. A stator for an alternator according to Claim 1 wherein:  
said rotor further comprises a air-cooling fan being rotationally driven together with said rotor.
11. A stator for an alternator according to Claim 1 wherein:  
a varnish or resin is applied to said coil end groups.
12. A stator for an alternator according to Claim 1 wherein:  
portions corresponding to coil ends in said conductors of an approximately rectangular cross section throughout are pressed and made to an approximately circular cross section or approximately elliptic cross section.
13. A stator for an alternator according to Claim 1 wherein:  
portions of said conductors of an approximately circular cross section throughout installed in said slots are pressed and made to an approximately rectangular cross section.
14. A stator for an alternator according to Claim 13 wherein:  
portions of said conductors installed in said slots are pressed so as to make a cross-sectional area thereof larger than a cross-sectional area of said conductors of said coil ends.
15. A stator for an alternator according to Claim 13 wherein:  
portions of said conductors of an approximately circular cross section throughout are installed in said slots and pressed to an approximately rectangular cross section.
16. A stator for an alternator according to Claim 13 wherein:

only portions of said conductors of an approximately circular cross section throughout installed in said slots are changed to a wave shape, after which said wave shape portion is pressed to an approximately rectangular cross section.

17. A stator for an alternator according to Claim 13 wherein:

portions of said conductors of an approximately circular cross section throughout installed in said slots are changed into a shape of large cross section and then pressed to an approximately rectangular cross section.

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